

Original Article

Socio-demographic Characteristics of Extradural Haematoma (EDH) Patients: Expeience of 63 Cases in Bangladesh

MM Ehsanul Haque¹, Shamima Sultana², Md.Saiful Alam³, Kamalesh Saha⁴, Wahida Begum⁵

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Abstract

Banckgroud: Extradural haematoma can occur due to head injury to different group of people. **Objectives:** The purpose of the present study was to see the socio-demographihc characteristics of extradural haemorrhage (EDH) patients attended at a tertiary care hospital Dhaka city. **Methodology:** This cross-sectional study was carried out in the Department of Neurosurgery at Dhaka Medical College and Hospital, Dhaka, Bangladesh from July 2001 to July 2003 for a period of two (2) years. Patients with the history of head trauma admitted in Neurosurgery unit of Dhaka Medical College and Hospital which were being diagnosed as EDH both clinically and radiologically were included as study population. Head injury patient with subdural haematoma, intracerebral haematoma, EDH associated with ASDH or ICH were excluded form this study. The diagnosis of EDH was made by clinically and by non contrast CT-scan in all patients. The details of socio-demographihc chacteristics among the patients were recorded. **Result:** A total 63 patients were included. In this study maximum patients were in the age group 21 to 30 years which was 26(41.3%) cases. The ratio between male and female was 14.75:1. Among 59 male patients, 15(25.4%) cases were pedestrian; 10(16.9%) cases were driver or helper; 14(23.7%) cases were passenger; 13(22.0%) cases were labourer and 7(11.8%) cases were rickshaw puller. Among female out of 4 patients, 2 (3.1%) were garment workers , 2(3.1%) were house wife. Majority were poor socio-economic condition which was 41(65.1%) cases followed by middle and high which were 17(27.0%) and 5(7.9%) cases respectively. **Conclusion:** In conclusion young male patients coming from poor socio-economic condtion are the most common acute extra dural haemorrhage patients.]Journal of Science Foundation, July 2017;15(2):52-56]

Keywords: epidural haemorrhage; extradural haematoma; extradural haemorrhage; cerebral epidural haematoma

Introduction

Extradural haematoma is gradually becoming a major problem with urbanization and increasing traffic and it is one of the most common cause of preventable death (Irie et al., 2011). Traumatic injuries are a major public health problem, imposing a greater burden on modern society than other diseases, but are the most preventable of major public health problems (Kauvar and Wade 2005). In children and in adults under the age of 45, injuries remain the major leading cause of death in developed country (Skandsen et al., 2010). More precisely head and spinal cord injuries, in particular are the leading cause of mortality and morbidity among the America's youth. This is also true in developing countries like Bangladesh.

¹Professor, Department of Neurosurgery, Chittagong Medical College, Chittagong, Bangladesh

²Assistant Professor, Department of Ophthalmology, National Institute of Ophthalmology & Hospital, Dhaka, Bangladesh

³Assistant Professor, Department of Neurosurgery, Chittagong Medical College, Chittagong, Bangladesh

⁴MS (Neurosurgery) Residence, Department of Neurosurgery, Chittagong Medical College, Chittagong, Bangladesh

⁵Associate Professor, Department of Neuroradiology & Imaging, National Institute of Neurosciences & Hospital, Dhaka, Bangladesh

Correspondence: Prof. Dr. MM Ehsanul Haque, Department of Neurosurgery, Chittagong Medical College, Chittagong, Bangladesh, Email: muntaka26@gmail.com; Cell no.: +8801714133941

Epidural haematoma may be intracranial (EDH) or spinal (SEDH). It occurs in approximately 2.0% of patients with head injuries and 5.0 to 15.0% of patients with fatal head injuries (Yi et al., 2006). It is considered to be the most serious complication of head injury, requiring immediate diagnosis and surgical intervention. EDH may be acute, subacute or chronic. SEDH also may be traumatic, though it may occur spontaneously. Mortality rates varies from 10 to 40% in head injury with extradural haematoma (Tagliaferri et al., 2006). It may be quite high in developing country like Bangladesh where no actual statistical data is yet available. From statistic of ministry of Homes (Bangladesh) about 9 to 10 deaths occurring from road traffic accidents in average daily (Langlois et al., 2006). The number is more when assault and other causes of injury are taken into consideration.

Epidural haematoma usually results from a brief linear contact force to the calvaria that causes separation of the periosteal dura from bone and disruption of interposed vessels due to shearing stress (Rickels et al., 2010). Skull fractures occur in 85.0% to 95.0% of adult cases, but they are much less common in children because of the plasticity of the immature calvaria (Roozenbeek et al., 2013). Arterial or venous structures may be compromised, causing rapid expansion of the haematoma; however, chronic or delayed manifestations may occur when venous sources are involved. Extension of the haematoma usually is limited by suture lines owing to the tight attachment of the dura at these locations. The temporoparietal region and the middle meningeal artery are involved most commonly, although the anterior ethmoidal artery may be involved in frontal injuries, the transverse or sigmoid sinus in occipital injuries, and the superior sagittal sinus in trauma to the vertex (Reilly and Bullock 2005). The purpose of the present study was to see the socio-demographic characteristics of acute extra dural haemorrhage (EDH) patients attended at a tertiary care hospital Dhaka city.

Methodology

This study was designed as descriptive cross-sectional study and was carried out in the Department of Neurosurgery at Dhaka Medical College and Hospital, Dhaka, Bangladesh from July 2001 to July 2003 for a period of two (2) years. Patients with the history of head trauma admitted in Neurosurgery unit of Dhaka medical college and Hospital which were being diagnosed as EDH both clinically and radiologically were included in the study as study population. Head injury patient with subdural haematoma, intracerebral haematoma, EDH associated with ASDH or ICH and patients not attending in the follow-up visit were excluded from this study. The diagnosis of EDH was made by clinically and by non contrast CT-scan in all patients. Common clinical presentation were headache, nausea/vomiting, seizures, bradycardia and/or hypertension indicative of elevated intracranial pressure, alteration in level of consciousness, anisocoria like ipsilateral dilation of the pupil due to uncal herniation with compression of the oculomotor nerve, facial nerve injury, weakness like contralateral hemiparesis due to compression of the cerebral peduncle, focal neurological deficits. The details history, age, sex and cause of injury, the effect of injury and the level of consciousness among the patients were recorded; furthermore neurological status was also recorded. All patients were treated surgically and haematoma was evacuated. In each case the type of operation, operative findings and site and source of haematoma were recorded. Outcome regarding neurological status, functional recovery, associated morbidity and mortality were assessed in each case as per Glasgow Outcome Scale and was compared between the two groups of patients who were treated surgically within 3rd day and 4th to 7th day after infliction of injury. All patients were examined thoroughly on admission, prior to surgical intervention, on 8th post operative day, (during the time of discharge) and follow up after one month. For the purpose of recording, a proforma was prepared. Data were collected on predesigned data collection sheet, compiled and appropriate statistical analysis was done using computer based software SPSS program. Postoperative outcome was recorded and compared between two groups of patients who underwent surgical decompression with in two studied range of time. The relationship of time interval of surgical intervention and outcome of patients was analysed using multivariate analysis (Pearson Chi-Square test) and the conclusion drawn based on the 'p' value at the 5% level of significance. A semi-complete analysis table is attached with table (Computer based SPSS program).

Result

A total 63 patients were included. In this study maximum patients were in the age group 21 to 30 years which was 26(41.3%) cases followed by 31 to 40 years which was 18(28.6%) cases. Majority of cases were

in their active period of life which was in the age group of 21 to 40 years and this was 44(69.8%) cases (Table 1).

Table 1: Age Distribution In Study Group (n=63)

Age Group	Frequency	Percent
0 to 10 Years	3	4.7
11 to 20 Years	8	12.7
21 to 30 Years	26	41.3
31 to 40 Years	18	28.6
41 to 50 Years	5	7.9
51 to 60 Years	3	4.7
Total	63	100.0

In this study male were mostly affected group which was 59(93.6%) cases and the rest patients were female which was 4(6.4%) cases. The ratio between male and female was 14.75:1. Because females are less exposed to exterior (Table 2).

Table 2: Sex Distribution In Study Group (n=63)

Gender	Frequency	Percent
Male	59	93.6
Female	4	6.4
Total	63	100.0

Among 59 male patients, 15(25.4%) cases were pedestrian; 10(16.9%) cases were driver or helper; 14(23.7%) cases were passenger; 13(22.0%) cases were labourer and 7(11.8%) cases were rickshaw puller (Table 3).

Table 3: Distribution of Occupational status Among Male Patients (n=59)

Occupation	Frequency	Percent
Pedestrian	15	25.4
Driver/helper	10	16.9
Passenger	14	23.7
Labour	13	22.0
Rickshaw puller	7	11.8
Total	59	100.0

Labour=worker, construction & Industries

Among female out of 4 patients, 2(3.1%) were garment workers, 2(3.1%) were house wife (Table 4).

Table 4: Distribution of Occupational status among Female Patients (n=4)

Occupation	Frequency	Percent
Garment worker	2	3.1
House wife	2	3.1
Total	4	6.4

All patients in both sex groups were from nearly similar socioeconomic status, making study groups more representative. Majority were poor socio-economic condition which was 41(65.1%) cases followed by middle and high which were 17(27.0%) and 5(7.9%) cases respectively (Table 5).

Table 5: Socio-economic status among Study Population (n=63)

SE Status	Frequency	Percent
High	5	7.9
Middle	17	27.0
Poor	41	65.1
Total	63	100.0

SE=Socio-economic status

Discussion

Traumatic brain injury (TBI) is a common cause of death and disability, as well as one of the most important health and social problems in the majority of countries including China (Corrigan et al., 2010). A well recognized secondary insult of TBI is epidural hematoma (EDH), which is classically considered to be an acute complication of TBI whose maximum development takes place immediately following trauma (Yates et al., 2006). However, there are also many reported cases of delayed/progressive epidural hematoma or very rare chronic epidural hematoma (Chen et al., 2012).

As a special pathological dimension, progressive epidural hematoma (PEDH) is considered in the patient whose repeat computerized tomography (CT) scans revealed new epidural hematoma or an increase in size compared with initial CT finding (Corrigan et al., 2010). Actually, with the development of neuroimaging technology and accessibility, a policy requiring repeat CT scanning was adopted in patients with head injury more than before, and thus it has become apparent that progressive epidural hematoma is indeed common.

In this study majority of the patients belonged to the decades of most active and productive period of life. Highest percentage of patients belonged to 3rd decade 26(41.3%) cases and 44(69.8%) cases of patients were in their most active period of life between 20 to 40 years of age. This is because, the working people avail themselves of traffic more than others and fall victim to RTA. It has been found that the age incidence corresponds to the findings of other study and has found that the peak incidence at 31 years in their study (Honeybul et al., 2010). In this study the average age of the patients with EDH was younger. It has been hypothesized that dural-based vessels might be more easily torn or avulsed due to deformation of the skull in younger patients, because the dura becomes increasingly adherent to the skull with advanced age, which reduces the risk of epidural hematoma (Tong et al., 2011). Ono et al (2001) retrospectively analysed 272 patients with severe head injury and suggested the GCS score was the only significant outcome prognostic factor in the EDH group.

Males were the major sufferers of the diseases, 59(93.6%) cases found in this series. The sex distribution reflects culture of this part of the world where women are less exposed to traffic as they remain mostly confined to household job. Out of 4 female patients 3 patients had their head injuries from being struck by sticks at home by relatives. This type of assault may be occurred towards the women. Similarly the male to female ratio has been shown 4:1 by Greenberg (1997). Ahmad and Hossain (1989) showed the similar result.

According to CT scan finding 25(39.7%) cases of the EDH were located in the temporal region; followed by frontal region 17(26.9%) cases, parietal region 13(20.6%) cases, temporoparietal region 5(7.9%) cases, occipital region 2(3.2%) cases and post fossa 1(1.6%) cases. These finding is consistent more with the later one. But both of their finding has got the similarities that they have found the temporal EDH in highest percentage of cases followed by occipital and posterior fossa in lowest percentage. These finding also give the impression that adult age group has been suffered more from temporal or temporoparietal and frontal EDH (Corrigan et al., 2010). Posterior fossa or occipital location is less common among them.

Among the major injuries resulting from traumatic brain injury (TBI), the extradural or epidural hematoma (EDH) is one of the most lethal (Rickels et al., 2010). EDH classically occurs by disruption of the middle meningeal artery, causing arterial bleeding, which dissects the dura from the inner bone plate of the skull. The presence of the hematoma promotes increased intracranial pressure, causing cell lesion and brain damage. The continuous development of means of transport associated with the disregard for traffic laws and an increasingly aggressive society are responsible for the increase in the number of cases of traumatic

extradural hematomas (Irie et al., 2011), which have a high mortality rate when the diagnosis is performed later. The mortality of patients in the early twentieth century was about 80.0%, thus constituting a true neurosurgical emergency (Langlois et al., 2006). In the 70s, with the advent of angiography and the improvement of diagnostic methods, the mortality rate was greater than 30.0% (Irie et al., 2011). The introduction of computed tomography (CT) allowed early diagnosis, leading to a decrease in its mortality and morbidity (Skandsen et al., 2010).

Currently, EDH represents about 1.0% to 5.5% of intracranial lesions in patients with traumatic brain injury, its mortality reaching 20% (Irie et al., 2011). Despite the small percentage of patients with head trauma developing EDH, the rapid neurological deterioration observed is often dramatic (Yi et al., 2006). Early diagnosis and neurosurgical intervention in a timely manner promote the reduction of morbidity and mortality, so it is vital that people who deal with trauma patients are familiar with and trained to manage this type of injury (Yi et al., 2006).

Concluision

In conclusion young adult patients are the most vulnerable for suffering of EDH. Most of the patients have got their injury during travelling. Interestingly pedestrian is also affected. Furthermore male patients are predominant than female. Majority of the study population are from the poor socio-economic condition. Further large scale, multicenter study should be conducted to see the scenario of whole country.

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